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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,692	01/14/2002	Hans Rudolf Muller	EPROV 17	8615

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EXAMINER

BERCH, MARK L

ART UNIT	PAPER NUMBER
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1624

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/030,692	Applicant(s) MULLER ET AL.	
	Examiner Mark L. Berch	Art Unit 1624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 29-31 and 33-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19, 29-31, 33-39 and 41-47 is/are rejected.
- 7) ☒ Claim(s) 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/27/06 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-19, 30-31, 33-39, 41-47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

1. In claim 43, the amendment would have a carbon in an alkyl replaced by $-N=$. That is not possible. That would require that the carbon have itself a double bond, as in e.g. $-CH_2-CH=CH_2$ becoming $-CH_2-N=CH_2$. However, such a $-CH_2-CH=CH_2$ group is not an alkyl group but an alkenyl group. Deletion is suggested.
2. The amendment to claim 1 is clearly erroneous. The ligand cannot "contain" these things, because the ligand is these things. Thus, for (ii), tetramethylenephosphine, i.e. $(C_4H_9)P$ -Phenyl, is a discrete molecule; it IS the ligand itself. To say that the ligand contains it makes no sense at all, and makes it unclear what applicants actually intend.

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3. In claim 17, what is a “bridging group”? This term says where it is, but not what it is.

The traverse is unpersuasive. There is no guidance as to what the nature of the bridge is, only where it is. The group is not being defined in terms of “what it does”, but purely where it is. Applicants previously cited *Amgen* in terms of the “insolubly ambiguous”. First, the case did not say that any term which does not meet such a standard is definite. It said “Rather, a claim is indefinite under §112 ¶ 2 if it is “insolubly ambiguous...” But did not say that any term not meeting that standard is definite. Applicants also cited *Hallman*, but that case did not have an indefiniteness rejection. The examiner is not saying that there is anything intrinsically wrong with defining something in terms of what it does, but rather that there is no clear guidance as to what this bridge consists of. It does not itself do something. It is the entire molecule that does something. It simply is. The same is true for *Swinehart*, which simply held that the function of being “transparent” was sufficiently clear. Applicants state that the nature is “readily understandable”, without stating what that understanding is. The further traverse is also unpersuasive. Whether or not the structure is “critical” is not the point. All parts of the claim must meet the standards of 35 USC 112, paragraph 2, not just the parts which applicants choose to denote as “critical”. In this regard, applicants argue that they have “conveyed ... the nature of the group itself.” But they have not, they have only said where it is, not what it is. Applicants point to page 30, lines 19-29. But this does not define the term. It only gives some limited examples, and thus it is thus not at all clear what the true scope is.. If that is what is intended, insertion of this material will resolve the matter (thus, claim 44 is fine). But this language is much different from the open-ended description in the remarks. For

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example, it is limited to no more than about 41 carbon atoms, (which would eliminate for example, many peptides, and most biologics), it doesn't include metals, etc. The claim language does not convey this. As another example, the formula provided at line 19 of page 30 requires that the bridging group must contain at least one carbon (note definition of R_{41}). Thus, the bridging group could not be e.g. $-O-$ or $-N=N-$. There is no mention of S or P or Halogen atoms, there is no mention of a heterocycle ring, there is no mention of C=N bonding (e.g. $-HC=N-$ or $-C(=NH)-$) as part of the bridge. Are these intended limitations on the claims? If any of these are not intended limitations, then what is the value of this material? If these are intended limitations, e.g. if applicants do intend that the linker must contain at least one carbon, the claim language does not convey this. The material in the specification requires that the bridge have some hydrocarbon component, so that ordinary bridges like $-CF_2-CF_2-$ or $-C(O)-$ or $-NH-C(O)-NH-$ is not included. Is that applicants intent? If applicants intended that page 30 lines 19-23 material, they should use that instead. If they do not intend to be so limited what else is intended? Applicants further argue that this group "achieves a specific end". It does not itself achieve an end like an engine does in a car, to use applicants' example. An engine has a specific task, which is to convert power into motion, and it is defined thusly; it is not defined, like "bridging group", by where it sits. An engine is not defined as the thing which sits in an engine mount.

4. "Heteroalkyl" is indefinite; there is no such thing. Is it a alkyl substituted by a heterocycle, e.g. pyridyl-methyl? An alkyl interrupted by a heteroatom, such as methoxymethyl? An alkyl substituted by a heteroatom, e.g. chloromethyl? Whatever choice is selected must be supported by the specification. Page 13 is noted, but these

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are just examples. It is impossible to tell the full scope of this. Can all the carbons be replaced with heteroatoms, and which heteroatoms can these be? Can the atom of attachment be the heteroatoms, e.g. can it be methoxy or N_2H_3 ? In addition, the carbon count is unclear. Is this the count before or the count after the substitution? Thus, would hydroxyalkyl be included? It started with two carbons, but after the substitution, it had one. The traverse is unpersuasive. The fact that a term is commonly used does not make it definite. The word "nice" surely has millions of hits, but that does not make it definite. Applicants have not addressed the core problem here, which as stated previously, is that there are a lot of different meanings for the term, and applicants have not said which of these many possible meanings they intend. It is agreed that the term is widely used, but it is widely used in very different ways, and there is no way of telling which definition applicants intended. And applicants have steadfastly declined to say.

5. "Cycloaliphatic" makes no sense. Aliphatic means lacking in rings. The "cyclo" negates that, so what does the term mean? Applicants in their traverse say of "cycloaliphatic", "one of ordinary skill in the art clearly understands what is meant" --- without stating what that is. What is meant? If applicants are unable to say, how can the term be said to be definite.
6. A similar problem occurs with the "heterocycloaliphatic" in claim 43. Does this mean "Cycloaliphatic" substituted by a heteroatom? Does this mean "Cycloaliphatic" attached by a heteroatom? Is it a heterocycle attached to an aliphatic group, i.e. Heterocycle-aliphatic? For whichever choice is selected, applicants must show that such choice, and not some other, was intended by the specification.

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7. The first claim 14 structure is problematic. Commas cannot be used in a structural formula. If these are intended as alternative choices, then applicants need to use a variable, and define it accordingly.
8. Further, Me needs to be defined as either methyl or metal.
9. Claim 17, line 3, should have “directly”.
10. The bond to the lower left of the second claim 14 structure need to be fixed. It presumably should go to the P atom, not to the phenyl ring.
11. In claims 14, 30, etc., what exactly is a “diteritary diphosphine”? Would that include (t-butyl)PH-PH(t-butyl)? It is a diphosphine and it does have two tertiary groups. Would it include (Methyl)₂P-P(methyl)₂? What about (Methyl)P=C=P(methyl) or (Methyl)P=CH-HC=P(methyl) or (Methyl)P=P(methyl)?
12. In claims 15, 31 etc., the phrase “directly via a bridging group” is contradictory. If phosphine groups are attached directly, there would be no bridging group at all.
13. In claim 16, line 2, the verb (presumably “is”) is missing before “of”. Note how it was done correctly in claim 18, line 2.
14. The use of the term “skeleton” in claim 18 is not clear. If one has a diteritary diphosphine molecule, what parts of it would qualify as skeleton and what parts are non-skeleton?
15. In Claim 19, what exactly is a “complex acid”?
16. The last line of Claim 19 refers to a non-existent variable “A”.
17. The choices of X8 and X9 as allyl or methylallyl are impossible. If these choices were used, then the Ruthenium would be Ru(0), but the formula explicitly says Ru(II). Thus, either the metal is misdesignated, or the anions are missing. For whichever choice is

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selected, applicants must show that such choice, and not the other, was intended by the specification. Deletion is suggested.

Claims 1-2, 4, 8-19, 29-32, 34-37, 43-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The scope of a "compound", which replaces the earlier "derivatives", is unclear. What qualifies as a compound and what does not? If the 4-oxo were instead thioxo, or =NR or dihydrogen, or dimethyl, or removed, etc, would that still qualify as "a tetrahydropterin compound"? If the 2-amino group were dimethylamino, or nitro, or halo, or were removed, would that be a derivative? If an additional ring were fused onto the core (e.g. at the 6,7 positions or cyclized via the 2-amino group and some other position), or one or the other ring were opened up, would that be a pterin compound or would it not be? Would a metal complex of pterin qualify? Could any substituent at all appear at the 3-position? The traverse is unpersuasive. Applicants point out that "Numerous synthetics and naturally occurring pterin and pterin derivatives exist." The problem is not the existence of such compounds, it is the unknown line between compounds that fall within the claim and those which do not. The issue here is not whether or not the claim "may be broad", as the examiner has not raised the issue of breadth. It is not even clear whether the new term "compound" is supposed to be broader, narrower or of the same scope as "derivative". The question here is not one of "inoperative embodiments" --- this is a rejection under paragraph 2. The examiner has also not asked for any "listing" of "all known pterin compounds". Applicants says "all pterin compounds are intended to be encompassed". The examiner understands that, but the scope of "pterin compounds" is itself not clear. Is a

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compounds which begins with the structure given, but has additional rings fused (e.g. at the 6,7 positions or cyclized via the 2-amino group and some other position) in the category of pterins or not? It is by no means clear. Without a boundary between what is encompassed by the claim and what is not, the claim is indefinite. The traverse is unpersuasive. Applicants refer to possible inoperative embodiments, issues of breadth, etc. As the examiner has tried to set forth, this is NOT a rejection under paragraph 1, but a rejection under paragraph 2. Applicants state, "Listing all the known pterin compounds is not an easy task...." The examiner has made no such requirement, and indeed, the examiner has never said that applicants even are limited to known ones. The problem, as the examiner has set forth in some detail, is that there is no clear line between what is a pterin compound and what is not, and the examiner gave numerous specifics of where this difficulty arises. Applicants' statement that a pterin compound is one in which "the pterin structure is present" simply begs the question, because applicants have not stated what are the essential elements of the "the pterin structure". Applicants state, "all pterin compounds are intended to be encompassed". That is understood. But what is not understood is what does and what does not fall within the term "pterin compounds". The examiner posed some very specific questions in the Final Rejection, and again here, none of which have been addressed.

Claim Objections

Claim 40 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Berch whose telephone number is 571-272-0663.

The examiner can normally be reached on M-F 7:15 - 3:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on (571)272-0661. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



**Mark L. Berch
Primary Examiner
Art Unit 1624**

6/15/2006